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Theory Experiment

Fabrication and Metrology of Ignition Design Graded Copper Doped Beryllium Capsules With Fill Tubes* A. Nikroo, M.S. Conyers, S.A. Eddinger, A.C. Forsman, H. Huang, E.H. Lundgren, K.A. Moreno, H. Xu, K.P. Youngblood, Z.A. Zimmerer, *General Atomics*; S.D. Bhandarkar, C.S. Alford, S.A. Letts, J.L. Reynolds, *LLNL* – Graded doped beryllium is currently the baseline ablator in designs for achieving ignition in the National Ignition Facility (NIF). In this paper, we report on the progress towards fabricating and characterizing such beryllium capsules for NIF ignition designs. We have eliminated the unanticipated gas leakage observed in graded copper doped beryllium capsules made by sputter coating by ion-assisted deposition. Polishing and mandrel selection render shells that meet the surface roughness. Precision radiography measures azimuthal x-ray optical depth of the shell to 10^{-4} . Laser drilling produces 5 μm holes in full thickness shells. Progress towards drilling a counter bore and 10 μm fill tube attachment to ignition design will be discussed. Improvements in metrology of Cu dopant and contaminant profile using quantitative contact and electron probe techniques will be also presented.

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